Week 3
MATH 33A
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1.2.48 Consider the following systems of equation:

$$y + 2kz = 0$$
$$x + 2y + 6z = 6$$
$$x + 2y + (k+2)z = 6$$

(a) For which values of k does this system have a unique solution?

(b) When is there no solution?

(c) When are there infinite solutions?

1.3.19 Compute: $\begin{bmatrix} 1 & 1 & -1 \\ -5 & 1 & 1 \\ 1 & -5 & 3 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$

1.3.25 Let A be a 4×4 matrix and let b and c be two vectors in $\mathbb{R}^4$. We are told that $Ax = b$ is inconsistent. What can you say about the number of solutions to $Ax = c$?

2-2.10 (Last Week) Let $A = \begin{bmatrix} 1 & -1 & 0 \\ 0 & -2 & 4 \\ -5 & 4 & 2 \end{bmatrix}$ and $b = \begin{bmatrix} -2 \\ 4 \\ -14 \end{bmatrix}$.

Determine if b is a linear combination of a_1, a_2, a_3, the columns of A. If so, determine a nontrivial linear combination.